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## Patent Abstracts of Japan

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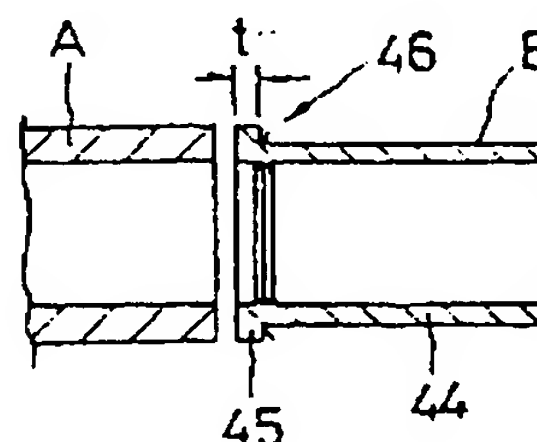
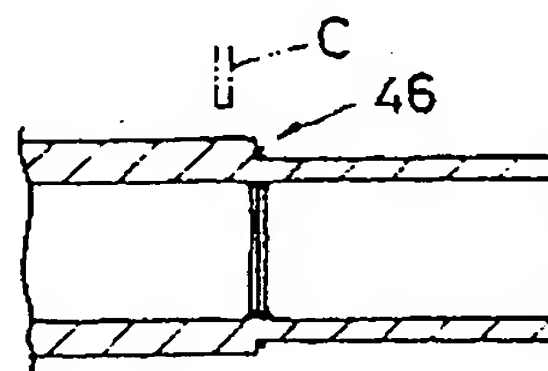
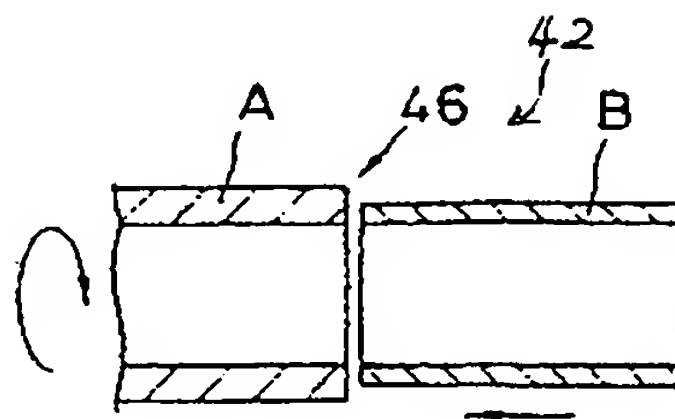
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APPLICATION NUMBER : 59243153

APPLICANT : YAMAHA MOTOR CO LTD;

INVENTOR : KOIKE TOSHIKATSU;

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TITLE : CYLINDER SLEEVE FOR  
RECIPROCATION MACHINE



ABSTRACT : PURPOSE: To stabilize the structure of the slidable surface of a piston by finishing the semimanufactured article obtained through friction welding for a cylinder part obtained from centrifugal casting and a collar part projecting in the direction of outer circumference from the upper edge of the cylinder part, through machining.

CONSTITUTION: A cylinder part 44 having a piston hole and a collar part 45 fixed at one edge of the cylinder part 44 are prepared separately, and a cylinder sleeve 42 is formed by integrally joining in metallurgical form the cylinder part 44 onto the edge surface of the collar part 45 through friction welding. Said cylinder part 44 is formed through the centrifugal casting of the casted iron containing 3~10% phosphorus to improve abrasion resistance and seizure-proofness, and the three-component eutectic mixture composition consisting of phosphorus, iron, and carbon is distributed uniformly inside. After the joint, the material forming the collar part 45 is cut by a cutting tool C at the position departed by a proper distance (t) from the joint part 46, and the necessary finishing works are carried-out for finishing.

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